GALEN

ON ANTECEDENT CAUSES

EDITED WITH AN INTRODUCTION,
TRANSLATION AND COMMENTARY

BY

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CAMBRIDGE
UNIVERSITY PRESS

PUBLISHED BY THE PRESS SYNDICATE OF THE
UNIVERSITY OF CAMBRIDGE
The Pitt Building, Trumpington Street, Cambridge CB2 1RP,
United Kingdom

CAMBRIDGE UNIVERSITY PRESS
The Edinburgh Building, Cambridge CB2 2RU, United Kingdom
40 West 20th Street, New York, NY 10011-4211, USA
10 Stamford Road, Oakleigh, Melbourne 3166, Australia

First published 1998

Typeset in Baskerville and Greek New Hellenic [AO]

A catalogue record for this book is available from the British Library

Library of Congress cataloguing in publication data

Galen.
[De causis procatarcticis. English]
Galen on antecedent causes / edited with introduction,
translation, and commentary by R. J. Hankinson.
p. cm. – (Cambridge classical texts and commentaries; 35)
Includes index.
ISBN 0-521-62250-6 (hardbound)
1. Causation – Early works to 1800. 1. Hankinson, R. J.
II. Title. III. Series.
B577.G23D4313 1998
122 – dc21 97-28620 CIP

ISBN 0 521 62250 6 hardback

Transferred to digital printing 2003

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INTRODUCTION

In recent years, there has been a renaissance of interest in later Greek philosophy and science, and in particular in the debates in epistemology which preoccupied the Hellenistic schools, but relatively little work has been done so far to chart the relations between the philosophers and the Greek medical schools of later antiquity. Yet the doctors represent one of our major sources of information about the philosophy of the early imperial period. In many cases doctors were themselves philosophers; and rather more alarmingly, professional philosophers sometimes practised medicine.

Supreme among these doctor–philosophers, in regard to both the quality and the quantity of his output, was Galen of Pergamum. There has been a tendency to regard Galen as merely an eclectic figure in philosophy, drawing his ideas from a wide variety of sources without much regard for their mutual coherence, and assembling from them a kind of uncritical philosophical pot-pourri. This, I think, does a great disservice to a powerful and original thinker, who drew on the elements of a rich and diverse tradition in order to create a system of explanation at once strong enough and subtle enough to circumvent the powerful destructive epistemology of the Sceptics, and their various medical *confrères*, and to set science and the scientific enterprise on a firm methodological foundation. Whatever the failure of Galen's science as science, it represents, I think, a remarkable achievement in philosophy.

That is sufficient justification, I hope, for offering a detailed commentary on, as well as a new text and translation of, a brief and hitherto little discussed *opusculum* of Galen: his treatise on antecedent causes, *De Causis Procatarcticis*. For brief as it is, it offers a fascinating glimpse into the debates which raged between doctors and philosophers

of different persuasions as to the scope and possibility of knowledge; and it furnishes an appropriate peg on which to hang discussion of material drawn from a wide variety of sources throughout later antiquity. The preoccupations of my commentary are primarily philosophical; my aim has been to elucidate and evaluate the arguments Galen employs against his more or less sceptical opponents, to estimate how successful they are, both *ad hominem* and from the broader perspective of their general soundness. That is to say, I have approached the issues from the standpoint of a classical philosopher. However I have also tried to explain, to the best of my ability, the aspects of Galen's system of pathology and therapy that emerge from the text, and to locate them within the context of ancient medical disputes. If that makes the commentary at times appear to be something of a rag-bag of differing concerns, I can only say in its defence that Galen considered himself both a philosopher and a scientist, and was proud of the fact; and he believed that one could not properly fulfil one function without a thorough knowledge of the other. Science requires logic, demonstrative method, what we might call a methodology; and the practical man of medicine needs, in addition to intellectual ability, the moral virtues. Science and philosophy were for Galen indivisible.

1. GALEN'S LIFE

Galen was born in Pergamum on the Ionian seaboard in September, AD 129. That we can date his birth so accurately is due partly to the fact that he scatters biographical details and clues liberally throughout his work, and partly to the ingenuity of scholars in tracking down, evaluating and collating them.[1] The traditional date of his death is

[1] One should mention in particular the work of Vivian Nutton: for further information on Galen's life and career, see Nutton, 1972, 1973, 1984.

AD 199, but the evidence for this is extremely weak (not to say worthless),[2] and it is probable that he was alive and working until well into the third century.[3]

In his youth, he tells us, he was fortunate in having a father (Nicon, an architect)[4] who gave him every encouragement in his studies: he was 'a most good-tempered, just, good and benevolent man',[5] in sharp contrast to Galen's mother, who flew into rages and bit her servants, a practice of which Galen disapproved;[6] it was as a result of his father's influence and example that he developed the controlled temper necessary for intense and fruitful study. Furthermore, he says, 'I was lucky in that I learned much faster than anyone else'.[7] When he was not quite fourteen, he began attending philosophy classes,[8] a subject for which he acquired an early taste, and was (at least on his own account) refuting his teachers while still a lad.[9] His father instilled in him the principles of arithmetic, thought and grammar,[10] and his philosophical training began in earnest

[2] It rests only on the authority of the Suda, the tenth-century Byzantine lexicon, which records, s.v. Γαληνός that he died 'at the same age as Socrates', i.e. seventy years.

[3] There is an Arabic tradition that has him working until he was into his eighties, which would put the date of his death sometime between 210 and 215; if he indeed did die as early as 199, he would have had to squeeze a truly prodigious amount of work into the last seven years of his admittedly hyper-active life (the period after the fire at the Temple of Peace destroyed much of his writings: see below); on this issue, see Nutton, 1984.

[4] See *Lib.Prop.* XIX 40 for Galen's account of his father, whom he revered: he was skilled in dialectic, which was something of a family tradition. See also *Bon.Mal.Suc.* VI 755, = *CMG* V 4 2, 392.21–4: Nicon was more renowned than any philosopher, according to Galen; cf. *MM* X 561, 609. See Bowersock, 1969, 60, for references to Nicon's architectural career.

[5] *Aff.Dig.* V 40, = *CMG* V 4 1, 27.22–3.

[6] *ib.* 40–41, = *ib.* 27.23–4.

[7] *Ord.Lib.Prop.* XIX 59

[8] *Aff.Dig.* V 41–2, = *CMG* V 4 1 1, 28.9–19.

[9] *Pecc.Dig.* V 70, = *ib.* 48.8–13; cf. *Hipp.Elem.* I 460–73.

[10] *Ord.Lib.Prop.* XIX 59; cf. *Bon.Mal.Suc.* VI 755, = *CMG* V 4 2, 392.26ff.

with logic when he was in his fifteenth year. His father wanted him to pursue a career in philosophy,[11] but was advised in a dream to make his son a doctor instead,[12] when Galen was in his seventeenth year. This emphasis on the rigour and intensity of his early education, and on the necessity of having the proper upbringing, is a recurrent theme throughout Galen's work which surfaces in several places in *CP.*[13]

Galen's father died in 148–9;[14] at about the same time, Galen travelled to Smyrna, Corinth and finally Alexandria (which had been a centre of medical excellence for four hundred years) in order to round out and complete his medical studies.[15] He was back in Pergamum in 157, to take up a job as physician to the gladiatorial school,[16] a post which afforded him an unparalleled opportunity to study the structures of the human body as they were revealed by industrial accidents.[17] We know that he was in Rome by September 162,[18] for his first stay there, which lasted until the summer of 166, when he left hurriedly, probably in order to avoid an outbreak of the

[11] *Ant.* XIV 17.

[12] *Ord.Lib.Prop.* XIX 59.

[13] See e.g. IX 122; XI 140–2; and especially, XIII 172.

[14] *Bon.Mal.Suc.* VI 756, = *CMG* V 4 2, 393.10–12.

[15] See Nutton, 1972, 1973; Bowersock, 1969, 62. Galen studied under Satyrus in his native Pergamum, Pelops in Smyrna, and Numisianus in both Corinth and Alexandria: see *Ord.Lib.Prop.* XIX 57; *Lib.Prop.* XIX 16–17; *HNH* XV 136, = *CMG* V 9 1, 70.8–11; *At.Bil.* V 112, = *CMG* V 4 1 1, 75.17. See also Sarton, 1954, 15–24; Scarborough, 1969, 115–17. For Galen's travels, see *AA* II 217–18; on his public demonstrations, by which he made a reputation for himself as a skilful anatomist, see *ib.* 663–6, 690, 693.

[16] *Comp.Med.Gen.* XIII 564, 641.

[17] See Scarborough, 1971, for a fuller discussion of Galen's stay at the gladiatorial school.

[18] See Nutton, 1972; cf. *AA* II 216–18; *Loc.Aff.* VIII 361; Bowersock, 1969, 61.

plague.[19] It seems likely that Galen's early public and private successes are to be dated to his first period in Rome.[20] His movements in the years immediately after his hasty departure are uncertain.[21] He returned to Rome in 168–9, via Lemnos, where he acquired a large supply of its medicinal earth, the famous *terra sigillata*,[22] and Aquileia.[23] In the autumn of that year, the emperor, Marcus Aurelius, asked Galen to accompany him on a campaign against the Germans,[24] a request he politely declined, saying that his patron deity Asclepius had expressly forbidden him to do so.[25] Galen remained in Rome, entrusted with the care of Commodus, the emperor's unlovely son.

Marcus was away until the autumn of 176,[26] longer than anticipated;[27] Galen records cures of both Commodus[28] and the emperor himself,[29] as well as of other prominent members of Rome's upper class. During this period, Galen

[19] *Lib.Prop.* XIX 15–19; see Nutton, 1973; 1979, 210: it is possible that he was recalled to Aquileia in 169 actually to deal with an outbreak of plague there (see Bowersock, 1969, 63; Birley, 1966, 213ff.); but as Nutton (1979, 211) points out, Galen's actual wording suggests that the outbreak coincided with his arrival: *Lib.Prop.* XIX 18.

[20] Successes such as his public demonstration of the function of the recurrent laryngeal nerve: *AA* II 667–75, cf. *ib.* 675–90; and the cure of Eudemus: *Hipp.Epid.* XVIIA 250, = *CMG* V 10 1, 125.17–27; and especially *Praen.* XIV 605–19, = *CMG* V 8 1, 74.11–88.13: see Nutton, 1979, *ad.loc.*

[21] See Nutton, 1979, 210; 1973, 169ff.; Ilberg, 1930, 291; *Lib.Prop.* XIX 17 remarks simply that 'I did what I usually did'.

[22] *SMT* XII 271–2.

[23] See n. 19 above.

[24] *Lib.Prop.* XIX 18–19.

[25] This happy piece of advice presumably came to Galen in a dream: see *Praen.* XIV 649–51, = *CMG* V 8 1, 118.20–120.4; Nutton, 1979, 211–12.

[26] Nutton, 1979, 213; Birley, 1966, 269ff.; Dio, *Hist.* 71.32.1.

[27] *Praen.* XIV 650, = *CMG* V 8 1, 118.33–120.1.

[28] *ib.* 661–4, = *ib.* 130.11–132.33.

[29] *ib.* 657–61, = *ib.* 126.16–130.10.

wrote many of his works (although much subsequently perished in the fire at the Temple of Peace in 192),[30] including 'On the Function of Parts' (*UP*); and at about this time he completed 'On the Doctrines of Hippocrates and Plato' (*PHP*).[31] Importantly for our dating of *CP*, we know that he wrote 'On the Differences of Fevers' (*Diff.Feb.*) during the emperor's German absence, immediately prior to the cure of Commodus,[32] which probably took place around 174.[33]

Galen's later career, which as far as we know he spent entirely in Rome, is more shadowy, partly because we owe much of our knowledge of his early career to *Praen.*, which was probably composed in about 178, partly because our other major autobiographical sources, *Lib.Prop.* and *Ord.Lib.Prop.*, are reticent about the activities of his maturity and old age. It is possible that Galen's reputation suffered an eclipse in his own lifetime, which would explain the lack of further internal evidence; it is a striking fact, long noted, that references to Galen and his achievements are remarkably few and far between in the century or so immediately after his death.[34] But it seems likely that this silence is only apparent, a function of the capricious selectivity of the tradition, and not a genuine reflection of a decline in Galen's standing as a philosopher and man of science.[35]

[30] *Lib.Prop.* XIX 19; *Ant.* XIV 66; see Duckworth, 1962, xi–xii.

[31] *Lib.Prop.* XIX 19–20.

[32] *Praen.* XIV 664, = *CMG* V 8 1, 132.26–9.

[33] Certainly before the spring of 175, when Commodus left Rome: Nutton, 1979, 224; Birley, 1966, 258.

[34] See Scarborough, 1981; Nutton, 1984, for full discussions of this issue; it should however be noted that there is comparatively little material extant from that century.

[35] See Nutton, 1984, on the Arabic evidence for Galen's immediate posthumous fame.

II. THE ANCIENT CONCEPT OF CAUSATION

Galen was a great systematiser and eclectic: in philosophy no less than in medicine, he believed in taking the best aspects of the views expressed by his great predecessors, and in moulding them into a consistent synthesis. Accordingly, in order to understand Galen's views, it is necessary to examine the tradition upon which he drew and built; and nowhere is this tradition richer and more diversified than in the field of causal theory, and the theory of explanation.

(a) Early developments

Explanation and cause are notions that are frequently, and not implausibly, taken to be at the basis of the scientific enterprise. The Presocratic cosmologists speculated about the basic principles of the universe, and attempted to reduce the stock of fundamental elements to as small a set as possible. If their reductionism seems jejune to us, it is as well to remember that the fundamental motivation, the drive for simplicity and generality in explanation, is recognisably the same as that of any contemporary particle physicist.

By the fifth century BC, the emergence of naturalistic explanation in medicine in the early Hippocratic texts had ensured that causal analysis was in the forefront of the development of scientific thinking. Much of the thrust of such seminal treatises as 'On the Sacred Disease' (*Morb.Sacr.*) and 'Airs, Waters, Places' (*Aer.*) derives from the idea that diseases can be given specific explanations in the form of determinate causal aetiologies, and that they should not simply be regarded as the manifestations of

divine malignity and displeasure.[36] The writers of these texts make it clear that at least one of the constraints placed on causal explanation, as opposed to other forms of explanation, is that it should be capable of generalisation. Consider the following passage from *Morb.Sacr.*:

> A great indication (τεκμήριον) that this disease is no more divine than any other is that it occurs in those who are phlegmatic by nature; it does not attack the bilious. Yet if it were divine, it should attack all types equally, and not distinguish between bilious and phlegmatic. (*Morb.Sacr.* ch. 5)

Proper scientific investigation involves causes; causes are a matter of regular conjunction between types of condition, or event; and those conjunctions are susceptible of generalised statement.

Parallel with the development of interest in scientific models of explanation came the increasingly subtle treatment of moral responsibility, and the importance of causal analysis in assigning it: this impetus comes from the rise of the Sophistic movement in the latter part of the fifth century. Antiphon's 'Tetralogies' preserve a series of contrasting arguments in a forensic setting, in which the notions of causal and moral responsibility are intertwined;[37] they provide the earliest example of the type of discussion Galen considers at *CP* XI 145–53. Gorgias, a rough contemporary of Antiphon, produced in his 'Encomium of Helen'[38] the earliest surviving extensive treatment of the subject of moral responsibility. Gorgias's argument attempts to establish that Helen's actions must have been caused by one of an exhaustive set of disjunctive possibilities; that, in each

[36] The best contemporary account of the development of the early Greek scientific *Weltanschauung* is given in Lloyd 1979; see in particular 24–9.

[37] Although not as hopelessly as some, e.g. Barnes, 1979, vol. 2, 206–14, 221–2, have thought.

[38] Which he described as a παίγνιον, literally 'plaything': it is a rhetorical exercise.

case, the cause of the action was outside her control; and thus to conclude that she cannot be responsible for her actions. Gorgias's sophistic forensic exercise prefigures exactly the type of argument Galen attacks in *CP* XIV, 178–85.[39]

One of the things that this development of causal (and related legal and moral) notions brings to the fore is the fact that more than one factor can intelligibly be held responsible, or partly responsible, for the same event. Such matters are clearly of concern to the jurist and the moral philosopher; but their more straightforwardly causal analogues matter to the scientist as well. Such issues form the nerve of much of Galen's argument in *CP*.[40] This brings in its train a refinement: it is at this period that we first encounter the distinction between causes proper and background conditions, which is Galen's concern at *CP* VII 76–90, a distinction which has become part of the entire Western tradition.[41] It is sometimes claimed that the first reference to such a distinction occurs in Plato, *Phd.* 99a–b; but as Lloyd (1979, 54) points out, earlier writers make use of the concept even if it is not formally expressed or analysed.[42] In a passage of particular importance, the writer of the 'Epidemics' (*Epid.*) I distinguishes between the general health of a community (which is the product of such factors as the incidence of storms, the direction of winds, coldness, the quality of the water, etc.),[43] and the individual occasions of particular illnesses, the προφάσεις, which might be excessive eating or drinking.[44] This distinction

[39] See Barnes, 1979, vol. 2, 221–28, for an analysis of Gorgias's arguments.

[40] Note his repeated insistence on the co-operative nature of causing: see e.g. VII 68; XI 154; and on the transitivity of the causal relation: XIV 173ff.

[41] Perhaps to its detriment: see Russell, 1912.

[42] Cf. 'On Ancient Medicine' (*Vet.Med.*), ch. 19.

[43] In short, the types of factor discussed by the author of *Aer.*

[44] See *Epid.* I, case 2.

between the general predispositions to health or disease, which can be ascribed to communities, age-groups, and people of determinately similar bodily constitutions on the one hand, and the individual triggers to illness in particular cases on the other, is a central feature of Galen's pathological and causal schemes; and it forms the basis of his counter-attack against the sceptical arguments which purport to show that there can be no such things as antecedent causes.[45] In particular the connection (to which Galen himself draws attention)[46] between the Hippocratic πρόφασις, the trigger-event, and Galen's conception of an antecedent cause, αἴτιον προκαταρκτικόν, should be stressed.

(b) Plato and his followers

In the passage from *Phaedo* mentioned above, which was well known to Galen,[47] Socrates makes Efficient and Material subsidiary to Final causation.[48] It is not good enough, he claims, to explain his physical presence in Athens simply by reference to the composition and arrangement of his body:

> For I dare swear these bones and sinews would long since have been off to Megara or Boeotia, impelled by their judgement of what is best, if I did not think it better and more honorable to accept whatever penalty my country enjoins rather than turn tail and run. But it is ridiculous to call such things causes. If one were to say that without bones, sinews, and everything else of that sort, I would be unable to act as I think fit, that would be true; but it would be extremely loose and inaccurate to say I am

[45] See I 10; VI 46.

[46] See I 7. For the Hippocratic use of the term, and its connection with the other sense of πρόφασις current in the fifth century, see Rawlings, 1975.

[47] See *UP* III 464–5.

[48] Cf. VI 67.

doing what I do because of them, not as a result of choosing what is best, even though my actions are guided by my intelligence. Imagine not being able to distinguish between a cause and that without which the cause could not be a cause! (*Phd.* 98e–99b)

Plato's point is perhaps an obvious one: in the analysis of human action, we must take into account such factors as will, motivation and judgement, and not merely the formation and action of the physical structures of the body, if we are to arrive at a complete description, and a full explanation. But if simple, the notion that action is frequently to be explained in terms of its end or intended purpose is nevertheless crucial, and comes to dominate discussion not just of human agency, but of biology as well (under the influence of Aristotle);[49] and the Aristotelian metaphysical principle that 'Nature does nothing in vain'[50] is taken over and indeed strengthened by Galen, being construed more or less literally and exceptionlessly, and functioning as a key element in his anatomy and physiology.[51] The notion of purposive action, which (with the possible exception of Anaxagoras's νοῦς)[52] is largely absent from Presocratic thought,[53] makes its appearance here, and comes to dominate science and philosophy;[54] and it is a fundamental feature of Galen's thought.

That Plato considered purposive explanation of far greater importance than any purely mechanistic account is confirmed by a passage of the *Timaeus*, 44d–46d, where the end for which everything is brought about is explicitly

[49] See Sorabji, 1980a, 155–74; Balme, 1965, 1972.

[50] Stated at e.g. *Cael.* 1.4, 271a33; and in numerous other places.

[51] See *UP passim*; *Nat.Fac.* II 75, 80–3, 87–8; *AA* II 286–7; for Galen's teleology in general, see Hankinson, 1988b and 1989.

[52] On which see Barnes, 1979, vol. 2, 113–16; but the role of νοῦς is disputed: see Hussey, 1972, 138–41.

[53] See Barnes, 1979, vol. 2, 113–16.

[54] The Epicureans alone of the non-Sceptical schools were prepared to reject the notion of teleological explanation in the natural sciences.

identified with the will of God, the Demiurge. Plato offers a physical description of the mechanisms of the Universe, the operation of light, vision, heat and cold; but at 46d–e, he says that these mechanistic explanations must be reckoned among 'the secondary and co-operative causes (συναίτια) which God, carrying into execution the idea of the Best as far as possible, uses as his ministers'. People tend to think of mechanistic accounts as the primary type of explanation: but they are wrong, neglecting as they do the end for the sake of which all these mechanisms are set in motion, and towards which they all tend. Plato proceeds to explain the faculties of sight and hearing in terms of the benefits they confer upon us, rather than in terms of the material conditions of their functioning (*Tim.* 46e–47e); this tendency, echoed and developed in Aristotle's biology, was to be of profound importance in Galen's own theory of explanation.[55]

I mention Plato's use of the term συναίτια above, since it was to become a technical term of Stoic, or at least Stoic-influenced, causal theorising;[56] but for Plato[57] it has a non-technical sense, or at least a sense different from that which it was later to acquire. It denotes, as one might expect, assistance in the causal process, but more specifically the means by which some process is carried through.[58] For Plato in the *Timaeus*, the mechanism of Efficient causation is the instrument with which the Creator realises his purposes. This connotation of instrumentality will become important later on for Galen's dissection of the complexi-

[55] The whole of *UP* is devoted to explanation of the structure and function of animals' organs in terms of the goods to which they are directed; for an analysis of the type of teleology involved, see Hankinson, 1989.

[56] See below, Section (c).

[57] The word crops up fourteen times in Plato, according to Brandwood, 1976.

[58] In this respect, συναίτια resemble the Galenic and Neoplatonic Instrumental Causes: see VI 67; and Section (b) below.

ties of the causal process; but for the moment it is worth noting how Plato treats Efficient causation as simply an adjunct to (perhaps a necessary condition of) full-blooded explanation. Galen is to some degree sympathetic to this picture; but he makes important modifications to it.

The similarity between the συναίτια of the *Timaeus* and the prerequisites (τὰ ὧν οὐκ ἄνευ) of the *Phaedo* is marked. In both cases we are told that what often (or even usually) passes for a proper causal explanation misses the real point, and concentrates instead on a relatively unimportant part of the process. The bones and sinews of the *Phaedo* are the direct correlates of the mechanisms of vision and hearing in the *Timaeus*; and the decision of Socrates corresponds to the will of the Creator.[59]

So, for Plato, full-blooded explanations (or at least an important sub-class of them) are teleological in form. But as Michael Frede (1980) has emphasised, the concept of cause underwent a gradual evolution during the Hellenistic period, as primarily under the influence of the Stoics causes came to be conceived more in terms of agency, as active principles of change to be differentiated from the matter in which the change takes place and from the passive background conditions which make change possible (Frede, 1980, 218–21). Causes become things that act, and that by their action produce results.[60] This tendency did not leave the Platonic tradition untouched. The fourth-century Neoplatonist Iamblichus interpreted a passage in *Philebus* (26e–27a) as saying the Active was the real cause, relegating Matter and Form to the status of co-operative

[59] It is tempting to discern here a Platonic forerunner to the Aristotelian concept of hypothetical necessity: the συναίτια would be hypothetically necessary for the will of the Creator to be carried through; that is to say, they are necessary conditions for its fulfilment. On this concept, see XII 162, on Herophilus.

[60] See *PH* 3. 14; Clement of Alexandria, *Str.* I (17). 82; 8 (9). 25; and see Frede, 1980, 218–19; see Section (c) below.

causes (συναίτια), and making the Paradigm and the End only causes in a qualified sense.[61] This is clearly to interpret Plato in the light of later causal ideas (and Plato's actual text makes it clear that he is really concerned with the Creator here, which makes these sorts of claims easier to harmonise with his general teleology); and this is important in that it shows that, for the Neoplatonists no less than for Galen, it was possible to borrow from a variety of traditions in order to construct their causal theories. The terminology of Matter and Form here is clearly Peripatetic in inspiration;[62] and the taxonomy bears the marks of the Aristotelian categories of explanation, but in a suitably modified form. In fact, the six causes of the Neoplatonists,[63] Matter, Form, Agent, Paradigm, Instrument and End, are close in general structure to the taxonomy that Galen himself adheres to in his Aristotelian moments,[64] although Galen is curiously cool towards the notion of the Formal Cause.[65] The five causes of the Middle Platonists[66] resemble Galen's scheme without the addition of the Instrumental Cause, but including the Formal and Paradigmatic Causes (the latter is a peculiar late-Platonic confection introduced in order to mark the difference between the transcendent world of the Forms and the Aristotelian form-in-matter).[67] Moreover they anticipate Galen's prac-

[61] Reported in Simplicius, *In Cat.*, *CIAG* VIII 327.6ff:

> Thus the Active is most properly the cause, so that, strictly speaking, the study of action (τὸ ποιεῖν) is the study of causation.

For the categories involved, cf. Seneca, *Ep.* 65.2, 4.

[62] See Section II (b) below.

[63] See Philoponus, *In Phys.* 1.1, *CIAG* XVI 5.7ff.; Simplicius, *In Phys.* 1.1, *CIAG* IX 10.35–11.4; see also Frede, 1980, 222.

[64] See VI-VII, 55–90; cf. *UP* III 464–71; *Symp.Diff.* VII 47–8.

[65] He mentions it, so far as I am aware, in only one passage, and then dismissively, at *UP* III 464–5, 471.

[66] Reported by Seneca, *Ep.* 65.8.

[67] It is possible that the later Platonic distinction between End and Paradigm is mirrored in Galen's differentiation of τέλος and σκοπός:

tice by referring to the different causal types by means of prepositional constructions. Thus the Final Cause or End is that for the sake of which; the Matter that in which; and so on.[68]

In general, though, however much the later Platonists were influenced by the general move towards considering causes as agents, they remained more or less true to the doctrines of the Master, particularly in matters concerning the relations that hold between God and the world;[69] see particularly Proclus, *ET* 75: true causes are to be identified with Intelligence (νοῦς); the causal mechanisms of the material world are merely the play of συναίτια.[70] The

on this see VI 57; but in any case Galen is not consistent in making a distinction between these categories, the precise meanings of which in later Greek contexts are notoriously difficult to discern; see usefully Striker, 1986, however.

[68] See VI 67; VII 70–1; the Middle Platonists did not invent the 'metaphysic of prepositions' (Dillon, 1977, 138); its forerunners are to be found in Aristotle; *Phys.* 2.3, 194b24–195a3. Compare the peculiar version of Potamo of Alexandria, cited at DL 1.21, who includes Place among the list of causes (for Galen's rejection of Place as a proper cause, see VII 78). See also Philo, *Prov.* 1.23; *Cher.* 125 ff. The prepositional designations survived into the Neoplatonic tradition: see Philoponus and Simplicius, *loc.cit.* above; Proclus, *ET* 75; Dodds, 1963, 240–1; for similar prepositional designations used in a different context, see *PH* 2 16, 21, 22, 48, 70, on the different types of criterion.

[69] See e.g. Iamblichus, attacking Porphyry, on the route to knowledge of the Divine at *Myst.* 2.11 (cf. 1.2; 3.26–7; 5.7–10): the knowledge of God achieved through philosophy can never be more than a knowledge of the συναίτια, and as such is to be distinguished from that achievable *via* the true theurgic union with the Divine. Such claims are the archetypes of a miserable sequence of mystical obfuscation and bad philosophy throughout the Christian tradition. Note also his attack on Porphyry's psychological account of divination: for Iamblichus, such accounts could not do more than elucidate a συναίτιον of the real cause, namely divine dispensation: *ib.* 3.1, 3, 24, 26–7; 10.3–4.

[70] On Proclus on causes, see Trouillard, 1958, 1974, 1977; and Barnes, 1983b, who draws interesting parallels between Proclus and Berkeley (see Berkeley, *Principles*, Sections 51, 53; cf. Bennett, 1971, 199ff.).

basic notion, common to Plato and his later followers, is that mere physical accounts of the interactions of stuffs in the material world[71] are inadequate to explain fully the structure and operations of the world and its inhabitants; and it is one that Galen embraces whole-heartedly. Even if the extent of Galen's Platonism can be over-estimated,[72] there is no doubt that he held Plato in the highest regard as a philosopher.[73]

(c) Aristotle and the Peripatetic tradition

Aristotle had much to say about the structure of explanation; and his doctrines remained influential for two millennia. They find formal exposition at *Physics* 2.3, 194b16–195b30,[74] where the system of the 'Four Causes' is expounded. It is frequently said that 'cause' is a misleading translation of Aristotle's αἴτιον;[75] but as long as we remember that he is not operating with a Humean conception of event-causation, and remember that for Aristotle αἴτια are answers to 'why' questions, this should occasion no confusion.

The division into four classes of αἴτιον, Formal, Material, Efficient and Final, is not as clear-cut as is sometimes assumed. *A.Po.* 2.11 is uncertain as to the status of the

[71] On the lines favoured by the Epicureans, see Lucretius, 1.146ff.

[72] As it is for instance in De Lacy, 1972: it is but one strand in a complex syncretism; it is to be regretted that Dillon and Long, 1988, contained no article on Galen; however, see my 1992c.

[73] See 1 1; xv 193; Plato is 'one of the best of philosophers' *Nat.Fac.* II 110. *PHP* (v 181–805, = *CMG* v 4 1 2) is designed to demonstrate the agreement between Plato and Hippocrates on such matters as the natural powers of animals and the structure and location of the soul, and to defend their views against the heresies (as he sees them) of Chrysippus.

[74] Most of which is virtually identical with *Met.* 5.2, 1013a24–1014a25; cf. also *Met.* 1.3, 983a24–32; *A.Po.* 2.11, 94a20–b27.

[75] See e.g. Hocutt, 1974; Sorabji, 1980, 46ff.

Material Cause;[76] and there are other passages of Aristotle where the divisions are less than precise. But whatever one makes of these indeterminacies, the idea that one can analyse the structure of the world by utilising different types of explanatory category was to have an immense influence on succeeding generations of thinkers on such subjects; and Galen was not untouched by that influence, although as one might expect, the doctrine survives in him in a somewhat modified form.

Briefly, the theory is as follows. Suppose we want an answer to the question why that thing over there is a bust of Pythagoras.[77] On Aristotle's account we can expect answers of four different sorts. We could point to the fact of its production, and the agent (or more accurately the type of agent) that made it (the Efficient Cause); we could talk of the bronze from which it is made (the Material Cause); we could draw attention to its having the proper structure of and all those features essentially associated with sculptures (the Formal Cause); or we could explain what function it fulfils (the Final Cause). The actual illustration of the sculpture, while not found precisely in that detailed form in Aristotle,[78] is a commonplace of the later Peripatetic tradition.[79]

[76] Referred to as 'that which, things being such, it is necessary that this is', i.e. a prerequisite; Ross thought that Aristotle did not have Material Causes as such in mind at all here: see Barnes, 1975, 215–16.

[77] This illustration runs the risk of being slightly misleading, in that it gives the impression that Aristotle's principal interest was in individual *instances* of causing, whereas his text makes it quite clear that it is causal or explanatory *types* (e.g. of sculptures in general) that interest him. This concern is closely connected with his general belief that to give a proper explanation of why some predicate attaches to a particular individual, one must do so by invoking the highest level in the genus–species hierarchy at which it is true to say that every individual below that stage has the attribute in question. But bearing that in mind, no harm should be done.

[78] He often, however, refers to sculpting as a paradigm of causal activity, and mentions bronze as the Material Cause of a sculpture at *Phys.* 2.3, 194b25; cf. *ib.* 195a29–b12.

[79] See e.g. Alexander of Aphrodisias, 'On Fate' (*Fat.*) 3, vol. 2. 167.2–16

At first sight, this analysis may seem somewhat bizarre, and the choice of explanatory category arbitrary.[80] Aristotle himself recognises that it is at best a sketch for the structure of explanation, and concedes that its categories are not rigid. At *Phys.* 2.7, 198a14–b9, he remarks that frequently Final and Formal Causes coincide, and sometimes Efficient, Final and Formal Causes all collapse into one.[81] And Aristotle further recognises that it may not in all cases be appropriate to ask all the types of 'why' question: in particular, chance events are those for which there is no direct Final Cause (although the action which produced the event may itself have been undertaken for some distinct purpose).[82]

At least in some moods, Galen adopts in its broad outlines the Aristotelian scheme, although he elaborates upon it: sometimes he distinguishes, in the sphere of Final Causation, between the End, τέλος, and the Goal, σκοπός;[83] and he regularly omits the Formal Cause, while accepting into the scheme the Instrumental Cause which we have

Bruns, = Sharples, 1983, 181 (cf. *ib.* 127); Clement, *Str.* 8 (9).26, 28; Seneca, *Ep.* 65.3–4 (cf. *ib.* 9 5). Simplicius's discussion of Aristotle's categories at *In Phys.* 2.3, *CIAG* IX 309.2–318.25, is interesting, not least in its application of a later terminology to Aristotle's original divisions: see n. 61 above; cf. Philoponus, *In Phys.* 2.3, *CIAG* XVI 241.3–247.18.

[80] This was a criticism of later commentators: Seneca, *Ep.* 65.11, warns against the proliferation of a 'swarm of causes'; see Frede, 1980, 227–28; cf. Simplicius, *In Phys.* 2.3, *CIAG* IX 322.18–324.4.

[81] Cf. *Met.* 7.17, 1041a6–b33, esp. 1046a26–32: see Ross, 1924, vol. 2, 22; cf. also *Met.* 12.4, 1070b22–35, identifying Formal and Efficient Causes; and *GC* 2.9, 335b6–8; *A.Po.* 2.11, 94a20–95a9.

[82] *Phys.* 2.5, 196b17–197a6: an event which comes about by chance (Aristotle's example is that of happening upon someone who owes you money in the market-place) is one which might have been undertaken deliberately for that purpose, but in fact was not. At *Phys.* 2.8, 199a3–5, spontaneous events are explicitly contrasted with those which have a final cause. See further VII 70.

[83] See VI 57; cf. *Symp.Diff.* VII 47–8; and *SI* I 64; Galen's practice is not uniform on this issue: see n. 60 above.